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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/273,643	03/23/1999	JUNG-HYUN HWANG	SAMJ-069	7387

7590 10/22/2003

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EXAMINER	
TILLERY, RASHAWN N	
ART UNIT	**PAPER NUMBER**
2612	11

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/273,643	HWANG ET AL.	
	Examiner	Art Unit	
	Rashawn N Tillery	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-12* is/are allowed.

6)☒ Claim(s) *1-6 and 13-18* is/are rejected.

7)☒ Claim(s) *7-8, 19-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

Applicant's arguments filed July 30, 2003 have been fully considered but they are not persuasive.

Regarding Applicant's arguments concerning the Kawabata performing amplification in the digital domain, the examiner respectfully disagrees. In figure 1, Kawabata inputs an analog video signal "a" into histogram generator 1 and video signal correction circuit 4. The histogram generator partitions the level of the analog signal "a." The output of Kawabata's gain controller 2 is used to "correct" the histogram "b." The output "d" of histogram correction circuit 3 is applied to the analog signal "a" of the video signal correction circuit for intensifying desired portions of the image signal. Thus, referring to Kawabata's figure 1 and Applicant's first signal processing means in figure 1, Kawabata's histogram generator is equivalent to Applicant's first ADC; the gain controller and histogram correction circuit could be interpreted to read on Applicant's gain selector; and Kawabata's video signal correction circuit reads on Applicant's amplifier.

Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-5 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al (US6373533) in view of Hieda (US5818521).

Kawabata teaches a tone correction circuit for correcting the tone of a video signal using a histogram. The histogram additionally is corrected using an adjustable gain controller. The histogram generator 1, in figure 1, partitions a luminance signal in the form of a histogram and outputs the histogram to histogram correction circuit 3. Gain controller 3 is capable of applying different gains to each section (see col. 2, line 64 to col. 3, line 12; also see figure 3).

Hieda teaches an image pickup apparatus for varying its gamma correction characteristic by using digital signal processing. In figure 3, each segment of a gamma curve is adjusted accordingly (see col. 6, lines 16-58).

Regarding claims 1 and 13, Kawabata discloses, in figure 1, an imaging apparatus comprising:

first signal processing means (1 and 2) for partitioning the level of an analog image signal into a plurality of sections (histogram generator 1), and for amplifying the

analog image signal by a plurality of gains according to each section (gain controller 2), at least two of the sections having different corresponding gains (in figure 3, S2 and S3 have different gain adjustments).

Kawabata does not expressly disclose a second signal processing means for non-linearly gamma correcting a digital signal. Hieda, however, reveals that it is well known in the art to non-linearly gamma correct a digital signal according to each section (see col. 10, lines 11-38; also see figure 9). It would have been obvious to one of ordinary skill in the art, given Kawabata's teachings of variably adjusting the gain of individual sections of a histogram in view of Hieda's teachings of variably adjusting sections of a gamma curve, to perform non-linearly gamma correction on a gain adjusted histogram according to each section. One would have been motivated to partition the image signal and adjust the gain and perform gamma correction for individual sections in an effort to attain appropriate settings in accordance with the conditions of a subject to be photographed.

Regarding claims 2 and 14, Kawabata inherently teaches an analog-to-digital converter since the histogram generator 1, in figure 1, partitions a luminance signal in the form of a histogram;

a gain selector (2) for selecting the corresponding gain from the plurality of different gains according to each section, and for outputting the selected gain; and

an amplifier (4) for amplifying the analog signal by the gain output from the gain selector.

Regarding claims 3 and 15, Kawabata inherently discloses a microcomputer for providing the plurality of gains since it is taught that the histogram correction circuit calculates a look-up table (see the Abstract).

Regarding claims 4 and 16, Kawabata discloses the plurality of different gains are approximately inversely proportional to the luminance level of the analog image signal (inherent feature).

Regarding claims 5 and 17, see claim 1 above.

2. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al in view of Hieda in further view of Kuo et al (US5982929).

Regarding claims 6 and 18, Kawabata teaches a tone correction circuit for correcting the tone of a video signal using a histogram. Hieda teaches an image pickup apparatus for varying its gamma correction characteristic by using digital signal processing. Neither Kawabata nor Heida explicitly disclose controlling chrominance gain of a non-linearly gamma-corrected digital signal. Kuo teaches "enhancing" the color of a video signal by applying gains to it. In figure 3 Kuo generates a histogram showing the distribution of intensity components for a color image. The histogram indicates over-exposure and under-exposure of a given image (see col. 5, line 31 to col. 6, line 54). It would have been obvious to one of ordinary skill in the art implement Kuo's teachings of "enhancement" of a color image using gain adjustment to the combination of Kawabata and Heida since the combination teaches performing non-linearly gamma correction on a gain adjusted histogram according to each section. One

would have been motivated to do so in an effort to optimally enhance a color image without the introduction of color distortion.

Allowable Subject Matter

1. Claims 7-8 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 7 and 19, the prior art does not teach or fairly suggest an imaging apparatus comprising a first processing means and a second processing means, wherein

the system further comprises passing a low-frequency component, partitioning the level of the luminance signal, passing a high-frequency component, multiplying the chrominance signal, adding the result of the multiply to the luminance signal, dividing the result of the add by 2 and clipping to 0 if the result of the division is less than 0.

2. Claims 9-12 are allowed.

Regarding claim 9, the prior art does not teach or fairly suggest an imaging apparatus comprising an amplifier, an analog-to-digital converter, a chrominance controller and a digital signal processor, wherein

the amplifier outputs to the ADC, the ADC outputs to the chrominance controller and the controller outputs to the processor.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rashawn N Tillery whose telephone number is 703-305-0627. The examiner can normally be reached on 9AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

RNT
October 17, 2003

NGOC-YEN VU
PRIMARY EXAMINER